

Wyoming Department of Environmental Quality
Water Quality Division
WYPDES (Wyoming Pollutant Discharge Elimination System) Program

STATEMENT OF BASIS
RENEWAL

APPLICANT NAME: Nautilus Exploration, LLC

MAILING ADDRESS: 825 East Speer Boulevard 100E
Denver, CO 80218

FACILITY LOCATION: Brooks Ranch Sand Unit, which is located in NW, S15, T33N, R77W, Converse County. The wastewater will be discharged to Muddy Creek (Class 2AB water) via an unnamed drainage (Class 3B water), North Platte River Basin.

NUMBER: WY0001473

CHANGES FROM THE PREVIOUS PERMIT: *Annual monitoring of pH and specific conductance is required.* This requirement is based on 40 CFR 122.44(i) which stipulates a minimum of annual monitoring for all constituents with effluent limits. Also, effluent limits for pH are 6.5-9.0 standards units, per the recently revised Chapter 1 and Chapter 2, Wyoming Water Quality Rules and Regulations. The previous permit pH limits were 6.5-8.5 standard units. Also, this permit includes language in Part I regarding blending of produced water with fresh water to meet water-quality-based effluent limits.

This permit requires an *initial monitoring report* of 18 constituents to determine compliance with water-quality-based and technology based standards. The report is due at the DEQ by no later than April 1, 2008. If not discharging during this time interval, please report to the DEQ that the facility is not discharging, and the water analysis report is due within 90 days of commencement of discharge. After receiving and reviewing the monitoring results for the initial discharge, the effluent limits and monitoring requirements established in this permit may be modified. See Part I.A.3 of the permit. Test results from discharge water from this facility, taken 12 months or less previous to this permit activation, may be submitted for this requirement. Also acceptable for submittal are water test results done in conjunction with use-attainability analysis or site-specific-criteria petitions for this permit, as per Section 33 or Section 34 of Chapter 1, Wyoming Water Quality Rules and Regulations.

BACKGROUND: This facility is an oil production unit in which the oil and formation waters are separated at the surface using a heater treater, gravity separation, emulsion breaking chemicals, and/or skim ponds and tanks. The permit authorizes the discharge to the surface provided the effluent quality is in compliance with Wyoming's produced water criteria per Chapter 2, Appendix H Water Quality Rules and Regulations, and Wyoming's instream water quality standards per Chapter 1, Wyoming Water Quality Rules and Regulations.

EFFLUENT LIMITS: Based on Chapter 2, Appendix H, Wyoming Water Quality Rules and Regulations, the proposed permit limits oil and grease to 10 mg/l, the pH must remain within the range of 6.5 to 9.0, and the specific conductance limit is 7,500 micromhos/cm. Waters meeting these criteria are to be put to use for stock and/or wildlife watering. Also, this permit establishes water-quality-based limits for radium and chloride, to protect aquatic life, that are based on discharges to Class 2AB waters, assuming the worst case scenario of no dilution provided by the receiving water, because there is inadequate water flow data available for Muddy Creek. These limits are 5 pCi/l for total-radium-226, and 230 mg/l for chlorides, per Chapter 1, Wyoming Water Quality Rules and Regulations.

AGRICULTURAL AND WILDLIFE USE OF PRODUCED WATER: Federal effluent guidelines, per 40 CFR Part 435 Subpart E, require that the discharges of produced water from oil production units be used for agricultural or wildlife propagation when discharged. The Wyoming Game and Fish Department has determined that discharge of produced water from all existing WYPDES-permitted oil production units in Wyoming is being used to enhance wildlife propagation and habitat. Hence, this facility is in compliance with 40 CFR Part 435 Subpart E, provided that the discharge meets the effluent limits of this WYPDES permit.

ANTIDEGRADATION, IMPAIRMENT REVIEW: The discharge of wastewater and the effluent limits that are established in this permit have been reviewed to ensure that the levels of water quality necessary to protect the designated uses of the receiving waters are maintained and protected. An antidegradation review has been conducted and verifies that the permit

conditions, including the effluent limitations established, provide a level of protection to the receiving water consistent with the antidegradation provisions of Wyoming surface water quality standards. An evaluation has been completed to ensure that the receiving water has not been listed on the 303(d) list as a waterbody that cannot support designated uses. The evaluation has revealed that the receiving water is not included on this list.

MONITORING, REPORTING FREQUENCY: Self-monitoring of effluent quality and quantity is required on a regular basis with reporting of results semiannually. The permit is scheduled to expire on December 31, 2012.

Roland Peterson
Water Quality Division
Department of Environmental Quality
Drafted: September 20, 2007

AUTHORIZATION TO DISCHARGE UNDER THE
WYOMING POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, (hereinafter referred to as "the Act"), and the Wyoming Environmental Quality Act,

Nautilus Exploration, LLC

is authorized to discharge from the wastewater treatment facilities serving the

Brooks Ranch Sand Unit

located in

the NW, S15, T33N, R77W, Converse County

to receiving waters named

Muddy Creek (Class 2AB water) via an unnamed drainage (Class 3B water), North Platte River Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II and III hereof.

This permit shall become effective on January 1, 2008.

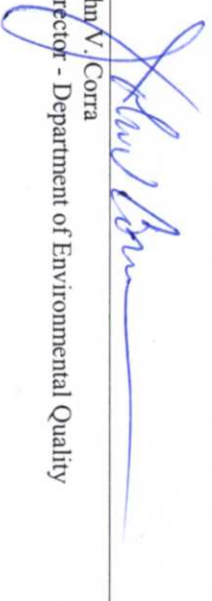
This permit and the authorization to discharge shall expire December 31, 2012, at midnight.



John F. Wagner
Administrator - Water Quality

Date

12/10/07



John V. Corra
Director - Department of Environmental Quality

Date

12/10/07

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Effective immediately and lasting through December 31, 2012, the quality of effluent discharged by the permittee shall, at a minimum, meet the limitations set forth below. The permittee is authorized to discharge from outfall serial number(s) 001.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations Daily Maximum</u>
Oil and Grease, mg/l	10
Specific Conductance, micromhos/cm	7,500
Total Radium 226, pCi/l	5
Chlorides, mg/l	230

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units in any single grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the discharge cause formation of a visible sheen or visible deposits on the bottom or shoreline of the receiving water.

All waters shall be discharged in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, ditches, or other waters of the state at the point of discharge. Discharges shall not occur in such a manner that will result in violations of Water Quality Rules and Regulations, Chapter 1, Section 15. In addition, there shall be no deposition of substances in quantities which could result in significant aesthetic degradation, or degradation of habitat for aquatic life, plant life or wildlife; or which could adversely affect public water supplies or those intended for agricultural or industrial use.

FOR FACILITIES THAT BLEND PRODUCED WATER WITH FRESH WATER AS A METHOD OF COMPLYING WITH WATER QUALITY BASED PERMIT EFFLUENT LIMITS

In some situations, it may be appropriate for the permit authorizing agent to allow the blending of produced water with fresh water as a method of complying with water quality based effluent limits that are established in the permit. The permit will clearly define the water quality based effluent limits that apply to the blended water and the location of compliance monitoring. However, prior to issuance of the permit that authorizes blending, the permittee must provide documentation demonstrating the need for blending, the blending rates, and a confirmation that an application has been submitted to the State Engineers' Office for use of the fresh water well.

In addition, an automated shutdown system must be installed and maintained on site that terminates the discharge of produced water in the event of the shutdown of the fresh water supply. If the flow of the fresh water supply is terminated, discharge of the produced water must also be terminated simultaneously until the fresh water flow is completely restored and the proper blending rates are regained that results in compliance with the appropriate water quality based effluent limits established in the permit.

Monitoring Requirements

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Oil and Grease	Once Every Two Months	Grab
Total Radium 226	Annually	Grab
Flow	Monthly	Instantaneous
Chlorides	Once Every Two Months	Grab
Specific Conductance	Annually	Grab
pH	Annually	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the outfall of the final treatment unit which is located out of the natural drainage and prior to admixture with diluent waters.

*** For facilities that blend produced water with fresh water as a method of complying with water quality based permit effluent limits:** oil and grease must be monitored, and oil and grease effluent limits met, before water blending occurs. Discharge flow, chlorides, and total radium 226 must be monitored before and after blending.

3. One-Time Initial Monitoring

Discharges shall be monitored by the permittee specified as follows. Within 60 days of permit renewal, a sample shall be collected from each outfall and analyzed for the constituents specified below, at the required detection limits. By no later than April 1, 2008, a summary report on the produced water must be submitted to the Wyoming Department of Environmental Quality at the address listed below. This summary report must include the results and detection limits for each of the constituents. After receiving the monitoring results for the initial discharge, the effluent limits and monitoring requirements established in this permit may be modified. If not discharging during this time interval, please report to the DEQ that the facility is not discharging, and the water analysis report is due within 90 days of commencement of discharge.

Test results from discharge water from this facility, taken 12 months or less previous to this permit activation, may be submitted for this requirement. Also acceptable for submittal are water test results done in conjunction with use-attainability analysis or site-specific-criteria petitions for this permit, as per Section 33 or Section 34 of Chapter 1, Wyoming Water Quality Rules and Regulations.

PARAMETER	REQUIRED DETECTION LIMIT	CHAPTER 1 AQUATIC LIFE STANDARD FOR CLASS 2AB WATERS
Aluminum, dissolved	50 ug/l	87 ug/l
Arsenic, total recoverable	1 ug/l	150 ug/l
Cadmium, dissolved	0.25 ug/l	0.25 ug/l (hardness dependent)
Chromium, dissolved (III)	1ug/l	74.1 ug/l (hardness dependent)
Copper, dissolved	9 ug/l	9 ug/l (hardness dependent)
Hardness (CaCO3) Mg/L	10 mg/l as CaCO ₃	(for metals analysis)
Iron, dissolved	50 ug/l	1000 ug/l
Lead, dissolved	2 ug/l	2.5 ug/l (hardness dependent)
Manganese, dissolved	50 ug/l	1462 ug/l (hardness dependent)
Mercury, dissolved	1 ug/l	0.77 ug/l
Nickel, dissolved	10 ug/l	52 ug/l (hardness dependent)
Radium	0.2 pCi/l	5 pCi/l
Selenium, total recoverable	5 ug/l	5 ug/l
Silver, dissolved	3 ug/l	3.4 ug/l (hardness dependent)
Sodium, dissolved	100 µg/l, report as mg/l	
Sulfate	10 mg/l	
Sulfide-Hydrogen Sulfide (S ₂ , HS ⁻)	0.1 mg/l	2 ug/l
Zinc, dissolved	50 ug/l	118.1 ug/l (hardness dependent)

Initial monitoring reports are to be sent to the following address:

Wyoming Department of Environmental Quality
Water Quality Division
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastewater, body of water, or substance. Monitoring points shall not be changed without notification to and approval by, the permit issuing authority.

2. Reporting

Effluent monitoring results obtained during the previous six (6) month(s) shall be summarized and reported on a Discharge Monitoring Report Form. If the permit requires whole effluent toxicity (WET) (biomonitoring) testing, WET test results must be reported on the most recent version of EPA Region VIII's Guidance for Whole Effluent Reporting. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the Signatory Requirements (see Part II.A.11.) and submitted to the state water pollution control agency at the following addresses postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on July 28, 2008.

Wyoming Department of Environmental Quality
Water Quality Division
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002
Telephone: (307) 777-7781

If no discharge occurs during the reporting period, "no discharge" shall be reported. If discharge is intermittent during the reporting period, sampling shall be done while the facility is discharging.

3. Definitions

- a. A "composite" sample, for monitoring requirements, is defined as a minimum of four (4) grab samples collected at equally spaced two (2) hour intervals and proportioned according to flow.
- b. The "daily maximum" shall be determined by the analysis of a single grab or composite sample.
- c. An "instantaneous" measurement for monitoring requirements is defined as a single reading, measurement, or observation.
- d. "MGD", for monitoring requirements, is defined as million gallons per day.
- e. The "monthly average" shall be determined by calculating the arithmetic mean (geometric mean in the case of fecal coliform) of all composite and/or grab samples collected during a calendar month.

- f. "Net" value, if noted under Effluent Characteristics is calculated on the basis of the net increase of the individual parameter over the quantity of that same parameter present in the intake water measured prior to any contamination or use in the process of this facility. Any contaminants contained in any intake water obtained from underground wells shall not be adjusted for as described above and, therefore, shall be considered as process input to the final effluent. Limitations in which "net" is not noted are calculated on the basis of gross measurements of each parameter in the discharge, irrespective of the quantity of those parameters in the intake waters.
- g. A "pollutant" is any substance or substances which, if allowed to enter surface waters of the state, causes or threatens to cause pollution as defined in the Wyoming Environmental Quality Act, Section 35-11-103.
- h. The "weekly average" shall be determined by calculating the arithmetic mean (geometric mean in the case of fecal coliform) of all composite and/or grab samples collected during any week.

4. Test Procedures

Test procedures for the analysis of pollutants, collection of samples, sample containers, sample preservation, and holding times, shall conform to regulations published pursuant to 40 CFR, Part 136, unless other test procedures have been specified in this permit.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling;
- b. The dates and times the analyses were performed;
- c. The person(s) who performed the analyses and collected the samples;
- d. The analytical techniques or methods used; and
- e. The results of all required analyses including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine the results.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated.

7. Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurements, report or application. This period may be extended by request of the administrator at any time. Data collected on site, copies of Discharge Monitoring Reports and a copy of this WYPPDES permit must be maintained on site during the duration of activity at the permitted location.

8. Penalties for Tampering

The Act provides that any person who falsifies, tampers with or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two (2) years per violation, or both.

9. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

10. Facility Identification

All facilities discharging produced water shall be clearly identified with an all-weather sign posted at a visually prominent location. This sign shall, as a minimum, convey the following information:

- a. The name of the company, corporation, person or persons who hold(s) the discharge permit; and
- b. The name of the facility (lease, tank battery number, etc.) as identified by the discharge permit.

11. Outlet Structures

The permittee shall construct and maintain all outlet structures so that there is a free fall from the discharge pipe sufficient to allow the collection of representative samples and the measurement of flow volume using the bucket and stopwatch technique.

If the volume of discharge is too large to make measurement of flow by the bucket and stopwatch technique practical, the permittee must be able to measure or calculate flow volume by another means to an accuracy of plus or minus ten percent of the actual flow.

PART II

A. MANAGEMENT REQUIREMENTS

1. Changes

The permittee shall give notice to the administrator of the Water Quality Division as soon as possible of any physical alterations or additions to the permitted facility. Notice is required when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29 (b); or
- b. The alteration or addition could change the nature or increase the quantity of pollutants discharged.

2. Noncompliance Notification

- a. The permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- b. The permittee shall report any noncompliance which may endanger health or the environment as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Quality Division, Wyoming Department of Environmental Quality at (307) 777-7781.
- c. A written submission shall be provided within five (5) days of the time that the permittee becomes aware of a noncompliance circumstance as described in paragraph b. above.
The written submission shall contain:
 - (1) A description of the noncompliance and its cause;
 - (2) The period of noncompliance, including exact dates and times;
 - (3) The estimated time noncompliance is expected to continue if it has not been corrected; and
 - (4) Steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance.
- d. The following occurrences of unanticipated noncompliance shall be reported by telephone to the Water Quality Division, Watershed Management Section, WYPDES Program (307) 777-7781 by the first workday following the day the permittee became aware of the circumstances.
 - (1) Any unanticipated bypass which exceeds any effluent limitation in the permit;
 - (2) Any upset which exceeds any effluent limitation in the permit; or
 - (3) Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.
- e. The administrator of the Water Quality Division may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Quality Division, Watershed Management Section, WYPDES Program (307) 777-7781.
- f. The permittee shall report all instances of noncompliance that have not been specifically addressed in any part of this permit at the time the monitoring reports are due.

